Section XVI
RADIO, HI-FI AND HEATER
CONTENTS

RADIO

The Electro Touch-Tuner (Model 920 HR) (Fig. 1) and 921 HR (1M) (Fig. 2), have six tubes and one transistor. It includes a variable tone control with manual tuning, push button tuning and automatic search tuning. The Music Master (Model 847) (Fig. 3) has five tubes and one transistor. It includes a variable tone control with manual tuning and push button tuning.

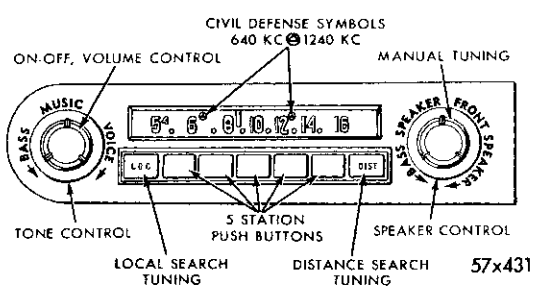

Fig. 1—Operating Controls 920HR

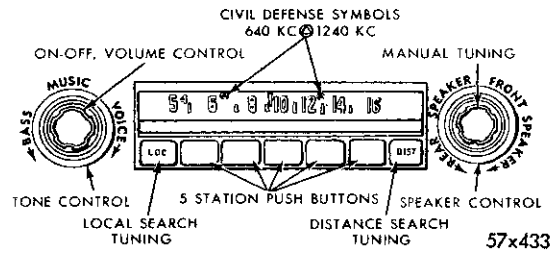

Fig. 2—Operating Controls 921HR

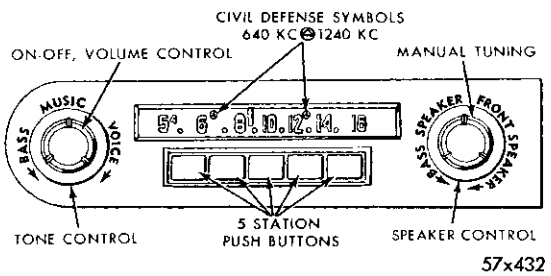

Fig. 3—Operating Controls 847

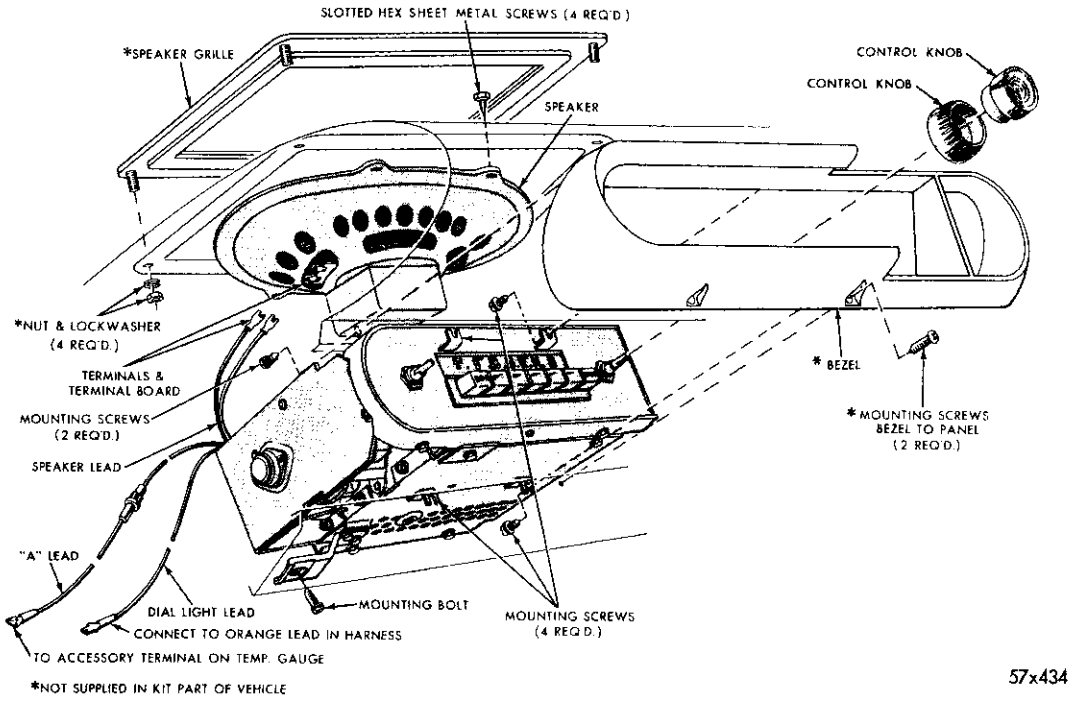

Fig. 4—Radio Model 920HR Typical of Model 847

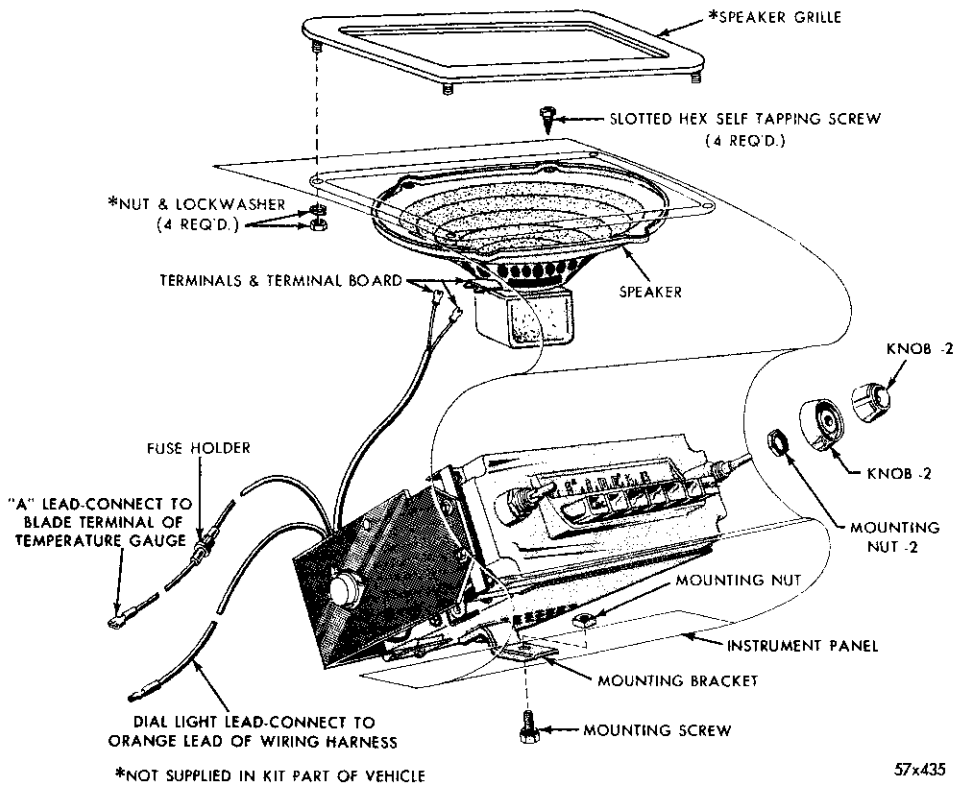

Fig. 5—Radio Model 921HR

SERVICE PROCEDURES

1. REMOVAL—MODELS C-75, C-76 (Fig. 4)

Disconnect antenna, pilot lamp lead from orange wire on harness, two wire lead from speaker, "A" lead from accessory terminal on temperature gauge. Remove rear speaker wire plug. Remove mounting screw from lower instrument panel to bracket on radio. Remove radio and ash receiver housing from panel. Remove radio and speaker from underneath the instrument panel.

CAUTION

Do not operate radio with speaker detached or damage to transistor will result. If rear seat speaker is disconnected from radio insert jumper wire in rear seat speaker, socket or receiver will not operate. (Fig. 8).

2. INSTALLATION (Fig. 4)

Install speaker from underneath the instrument panel. Mount radio to radio and ash receiver housing. Install radio and ash receiver housing in the panel. Attach radio mounting bracket to panel. Connect "A" lead to accessory terminal on the temperature gauge. Connect two wire lead to speaker. Connect rear speaker wire plug. Connect pilot lamp lead to orange wire from harness. Plug in antenna lead, as shown in Figure 8. Adjust antenna compensator.

CAUTION

Antenna compensator must be properly adjusted for satisfactory operation of radio.

3. REMOVAL—MODELS IM-1-2 and 4 (Fig. 5)

Disconnect antenna, pilot lamp lead from orange wire on harness, two wire lead from speaker, "A" lead from accessory terminal on temperature gauge. Remove rear seat speaker wire plug. Remove mounting nut from lower instrument panel to bracket on radio. Remove radio control knobs. Remove radio and speaker from underneath instrument panel.

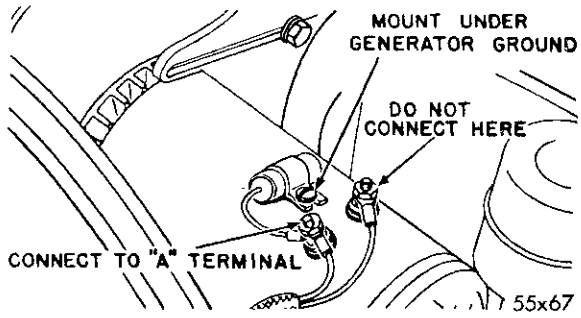

Fig. 6—Generator Condensor

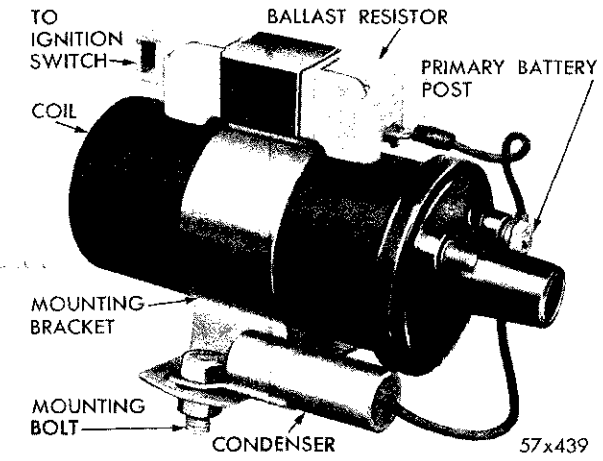

Fig. 7—Coil Condensor

4. INSTALLATION (Fig. 5)

Install speaker from underneath the instrument panel. Mount radio to panel. Install control knobs. Attach radio mounting bracket and nut to panel. Connect "A" lead to accessory terminal on the temperature gauge. Connect rear seat speaker wire plug. Connect two wire lead to speaker. Connect pilot lamp lead to orange wire from harness. Plug in antenna lead, as shown in Figure 8. Adjust antenna compensator.

5. INTERFERENCE

Install suppression equipment for elimination of interference and tire static (Figs. 6 and 7).

CAUTION

Antenna compensator must be properly adjusted for satisfactory operation of radio (Fig. 8).

6. ANTENNA COMPENSATOR

Extend antenna fully, tune radio manually to

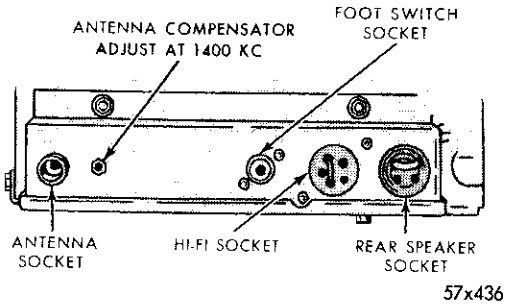

Fig. 8—Antenna Compensator Adjustment

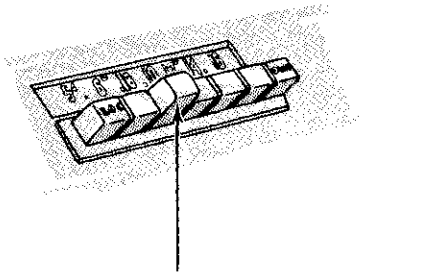

Fig. 9—Push Button Adjustment

a weak station, 1400 KC, turn antenna compensator, (Fig. 8) for maximum volume.

NOTE: It is important when adjusting the compensator that antenna is fully extended and compensator be trimmed at 1400 KC.

7. PUSH BUTTON ADJUSTMENT— MODELS 920HR-847—921HR (Fig. 9)

Extend antenna fully and turn radio on for fifteen minutes. Unlock push buttons by pulling them out. Manually tune in desired station and relock push buttons. Repeat operation on other push buttons.

8. LOCAL AND DISTANT PUSH BUTTONS

Local push button will tune only strong stations. Distant push button will tune all stations within range of radio.

NOTE: Do not set end push buttons.

In order to obtain the best performance from search tuning, antenna should be extended.

9. FOOT SWITCH SEARCH TUNER

The foot switch search tuner, on Models 920 HR and 921 HR, is located on the left forward end of the floor boards. By depressing with the foot, it will select a station on the radio.

HIGHWAY HI-FI RECORD PLAYER

10. OPERATION

Turn on radio. Put control knob in "Phono" position, of Hi-Fi record player. Place record on turntable, and push down gently on red tab located on left side of tone arm. While pushing down on the tab, move arm to right until it contacts stop.

Release tab, and stylus (needle) will come to rest on record. Slide player back into case, adjust volume and tone on radio.

Care of Records—To prevent damage to records (particularly in hot weather), remove records from turntable and place in storage space. Pressure plate on bottom of storage space rises and holds records firmly in place between two flat surfaces when unit is pushed back into case.

NOTE Always place tone arm in "off" position when Hi-Fi unit is not in use and push red knob down to radio position. To shut off Hi-Fi unit in an emergency turn radio control to off position.

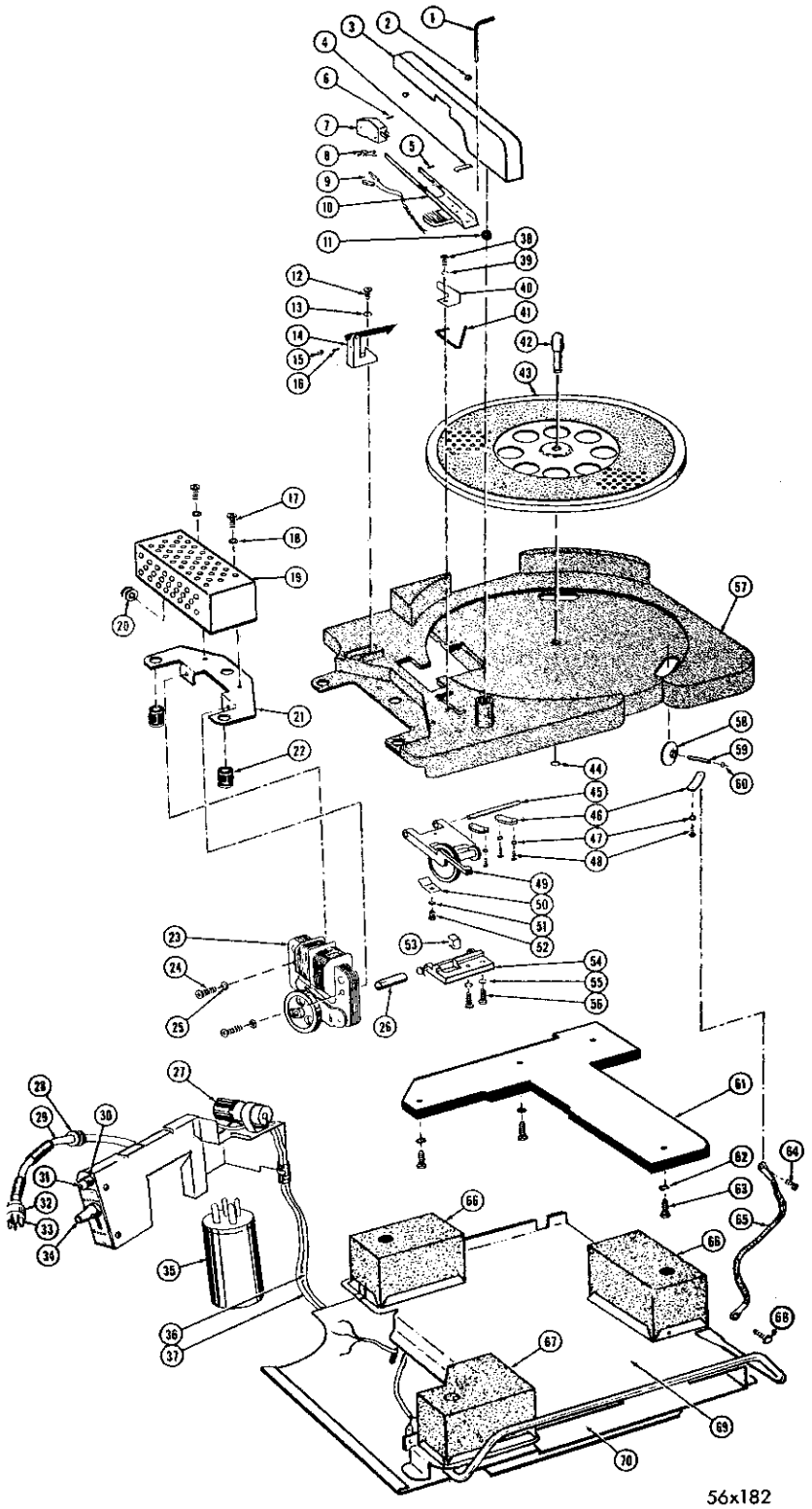

Fig. 10—Hi-Fi Record Player (Disassembled View)

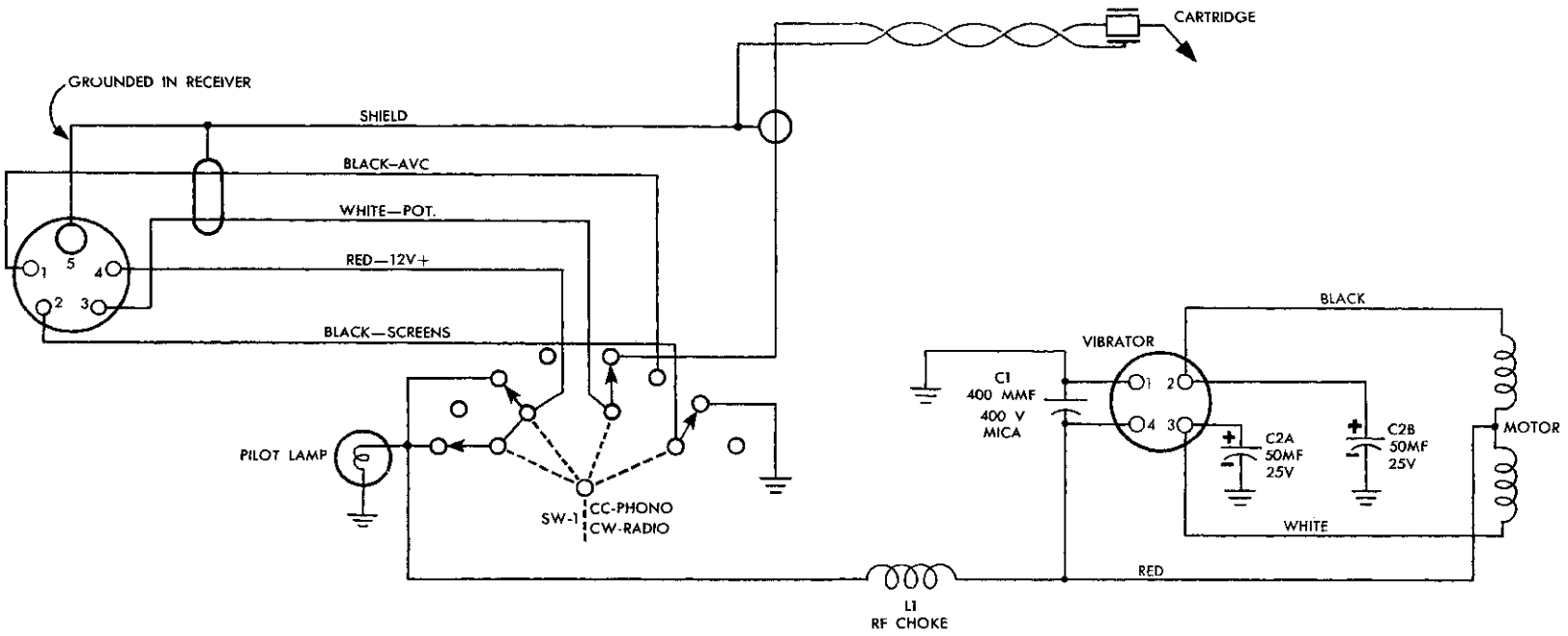

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Fig. 11—Hi-Fi Record Player Electrical Circuit Wiring Diagram

SERVICE PROCEDURES

11. REMOVAL AND INSTALLATION OF CHASSIS (Figs. 10 and 11)

a. Removal

Remove vibrator from left rear. Remove four screws from left side of case. Release grommet on plug wire. Release stop on bottom of chassis, and pull out until there is sufficient room to remove ground wire on underside of set. Remove set and place it on bench for repair.

b. Installation

NOTE Whenever the Hi-Fi is disconnected, insert the jumper wire in the Hi-Fi socket located in the Radio housing, as shown in Figure 8, or receiver will not operate.

When set is being installed, feed plug and wire through hole in case, and engage chassis into slides in case. Push set in about halfway, and install ground wire in chassis. Install retaining screws and wire retainer. Install vibrator and insert plug into socket in radio. After installation, alignment of chassis can be made through hole used to install vibrator.

12. REMOVAL OF TURNTABLE (CHASSIS REMOVED FROM CASE)

To remove turntable, remove spindle retainer clip. Lift turntable and spindle from base plate. Check nylon wheels; wheels must spin freely. Inspect turntable top pad and make sure pad is properly cemented. The table and pad must be flat to provide good audio quality. Check turntable drive ring for proper cementing on under side of turntable.

13. REMOVAL OF IDLER ASSEMBLY (CHASSIS REMOVED FROM CASE)

Remove coupling shaft and bearing block. Remove four crosshead screws, and idler assembly. Use care when removing assembly because nicks or depressions in rubber wheel will result in poor audio quality (Flutter).

14. REPLACEMENT OF MOTOR (CHASSIS REMOVED FROM CASE)

Remove screws retaining cover to motor support. Unsolder black, red and white wires from terminals. Remove both screws which retain motor frame to bracket. Remove motor assemby and coupling will drop out. Install coupling on motor; install motor and resolder wires. Do not burn separators when soldering wires to terminals.

15. REMOVAL AND INSTALLATION OF COUPLING (CHASSIS REMOVED FROM CASE)

Two types of couplings are used, pin type with brass coupling shaft, and star type with nylon coupling shaft. The motor, coupling shaft, and bearing block with pin type coupling is not interchangeable with star type, unless all three components are replaced as a unit.

To remove coupling, pull carefully outward on motor and coupling will fall out. To install coupling, pull motor outward, engage coupling, and engage bearing block. There is sufficient movement in rubber mounts to install coupling.

16. REMOVAL OF TONE ARM (CHASSIS IN CASE)

If unit is equipped with a limit arm, remove the arm. To remove tone arm, press down gently on red tab and rotate arm until it is stopped by positioning latch. Allow stylus to fall momentarily; gently press down on red tab, swing arm to outboard position, and lift straight up. Do not lift arm up to high because this action may break connecting wires. A special lubricant is used on tone arm pivot and ball bearing. In addition to acting as a lubricant the material damps the lateral movement of tone arm. It is absolutely essential this lubricant not be wiped off and under no circumstances should a substitute be employed other than specified lubricant. If new tone arm is installed use specified lubricant.

17. REMOVAL OF ROCKER ARM (CHASSIS IN CASE)

Remove wire retaining clip by prying carefully with small screwdriver. If arm is to be replaced, it will be necessary to unsolder lead wires from underside of base. Press tab toward arm side until pivot pin is out of nylon bearing. (It may be necessary to lift retaining spring slightly, on opposite side of tone arm, to release rocker arm.) When assembly is re-

moved, the tension spring under rocker arm will snap back toward rear of rocker arm.

Make sure this spring is held in forward position, when rocker arm is installed in tone arm. Use care to prevent distortion spring. If spring is distorted, contact pressure of stylus will be changed. When rocker arm is installed, position lead wires. The arm should not contact the wire. The rocker arm must pivot freely in its nylon bearings.

Replacement of Needle

Pull needle from needle holder. When installing needle, make sure it snaps into slot on holder.

SERVICE DIAGNOSIS

18. TURNTABLE DOES NOT TURN

Check to see that motor is turning by observing flywheel. If motor is turning, check coupling between motor and bearing block. This may have been disconnected at either end, or it may have dropped off completely. If coupling is in proper position, check to see that damping spring is not too tightly set against idler lift arm, preventing it from dropping to its normal operating position.

19. MOTOR IS NOT TURNING

Make sure "Radio-Phono" switch is in "Phono" position and pilot lamp is lit. If pilot lamp is not lit and motor and vibrator are inoperative, check plug to see that it's secure in radio receptacle and check radio fuse.

With tone arm in "Off" and locked position, turn operating switch to radio position and spin flywheel with finger. The flywheel should spin freely. If flywheel spins freely, turn operating switch to "Phono" position, and check vibrator to make sure it is operating. If no vibration is felt vibrator should be replaced. Remove motor shield and check for open or shorted windings, or for wires shorting to chassis.

20. MOTOR DOES NOT SPIN FREELY

Check coupling to see that it is properly seated on both shafts. If coupling is properly seated, tightness may be caused by shift in position of self-aligning bearing used for motor shaft. Place screw driver on center of flywheel. With handle of another screw driver, gently tap handles together. (Care must be exercised to avoid hitting flywheel too hard or damage to motor may result.) When properly done, this should relieve misalignment of bearings. If flywheel is still tight, motor should be replaced.

21. TURNTABLE TURNS SLOWLY

Try another vibrator. Check for tight motor bearings, as outlined in Paragraph 17. Check battery voltage.

22. MOTOR VIBRATES WHEN UNIT IS ON

Make sure coupling is properly seated on both shafts, and that three rubber motor mounts are properly seated in motor support bracket and main casting.

23. ARM POSITIONS IMPROPERLY ON RECORD

If arm positions improperly when red tab is depressed and arm moved to "Stop", adjust tone arm's top assembly (in direction necessary) by loosening cross-headed screw located in slotted hole on top of assembly, moving entire assembly, then, tighten screw.

24. STOP LATCH OUT OF ADJUSTMENT

If tone arm is not positively stopped when red tab is depressed and arm moved to "Stop", lower stop latch by turning Allenhead screw (facing left on stop latch) counter-clockwise. Tighten nut on screw. If arm will not start records because stop latch is hooked over rocker arm, raise stop latch to clear arm. (Do not raise stop latch so high that positive stopping is not achieved). To raise stop latch, loosen nut on Allenscrew, turn screw clockwise as much as necessary, and tighten nut.

25. TONE ARM STUCK

If tone arm cannot be moved out of "Off" position by gently depressing red tab and gently pushing towards center of unit, check to see that tone arm shell is not hung up over idler lift crank. If it is hung up, tone arm can be released by gently lifting it until idler lift

crank can be moved to left, then arm should be pushed down.

Check to see that entire front of arm has not been pushed down by a severe blow. If this has happened, lift rear of arm about ¼ inch, press red tab, and move arm until it is no longer under housing. The arm may than be lifted completely off turntable for examination. If it is slightly bent, it may be possible to straighten arm with fingers, using care not to distort original shape of arm or damage needle. Make sure that rocker arm still pivots freely. If arm is badly bent, it should be replaced.

26. FLUTTER

This is a repeating sound (such as a thump or a gurgle), which occurs at frequency of about 40 cycles per second. Flutter can be caused by following conditions:

a. A bump or depression in idler wheel.

b. Motor flywheel rubbing.

c. Incorrectly aligned coupling.

d. Shock mount out of mounting hole.

e. Rough or non-concentric shaft in bearing block.

f. Rough nylon idler wheel (under turntable). The braided ground wire at right front of unit (going from underside of casting to front base rubber shock mount tray) may be rubbing against nylon idler wheel.

27. AUDIO DISTORTION

This is a slow repeating distortion (occurring every 1 or 2 seconds), which can be described as a change in pitch, such as that caused by warped record. Some causes of Audio Distortion may be:

a. Frozen or tight nylon idler wheels under turntable.

b. Slippery rubber drive ring under turntable (due to oil or grease on ring).

c. Bump or poor cementing of rubber drive ring.

d. Worn knurl on idler wheel. (This wheel drives rubber ring under turntable).

e. Tight or rough center spindle.

f. Poorly cemented rubber top on turntable (edge too high or loose).

g. Warped turntable or record.

28. STYLUS SKIPS OR JUMPS GROOVES WHEN CAR IS IN MOTION

a. Insufficient stylus pressure.

b. Defective stylus.

c. Unbalanced rocker arm.

d. Unbalanced tone arm.

e. Tone arm pivot improperly lubricated.

HOT WATER HEATER

The Chrysler MOPAR All Weather Comfort System supplies fresh air through cowl vent for ventilating, heating and defrosting (Fig. 12).

For summer operation there is one ventilator door provided, which directs fresh air from cowl vent opening to bottom of driver compartment. Two drain tubes are provided in bottom of air duct below ventilator door in case water does come in through vent.

For winter operation, turn blower on. The fresh air flows downward through heater case, heat exchanger blower, duct door and distributor duct. Temperature control is provided by a lever on instrument panel which opens the duct door on the right side of car to admit air to the distributor duct and also opens the heater water control valve. As the lever is moved toward warmer the water valve is opened further. The heater water valve will then maintain this temperature automatically.

Defrosting is provided by heated air flowing from distributor duct to defroster outlet on the top of instrument panel. The damper in the distributor duct divides the heater air to defroster outlet or floor as desired.

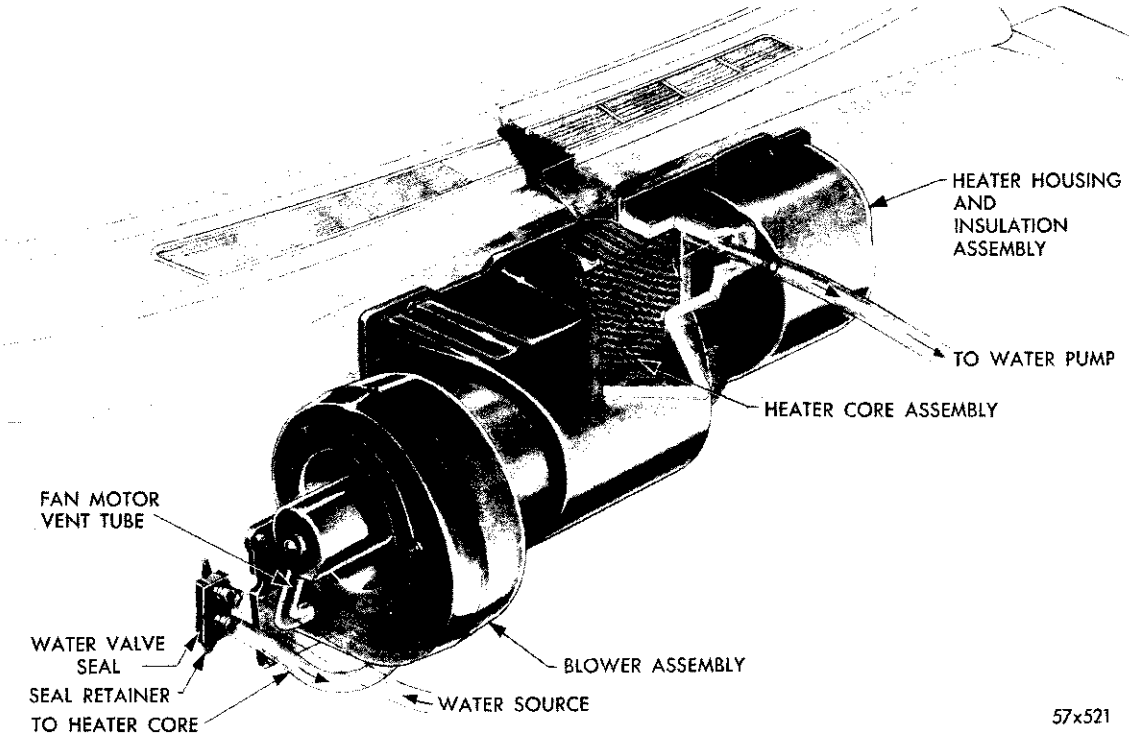

Fig. 12—Heater Installation (Engine Side)

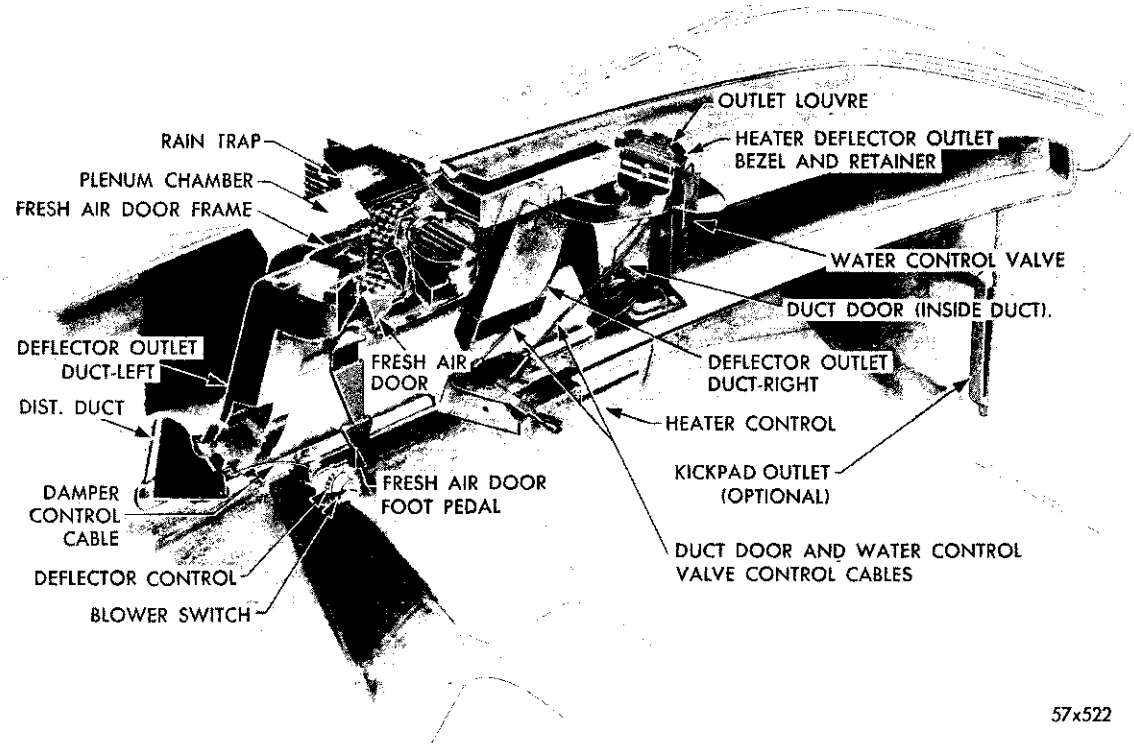

Fig. 13—Heater Installation (Driver's Side)

29. REMOVING AND INSTALLING CORE (Fig. 13)

Drain cooling system, remove hoses from engine side of firewall, remove heater housing (engine side) and remove core from housing. When installing housing and core be sure to draw bolts up evenly—alternate from top to bottom, working from center out. Fill cooling system, check for leaks with heater controls set at warmest position. Check blower and defroster for proper operation.

NOTE: In event an "air lock" condition occurs, remove heater outlet hose and turn temperature control to warmest position. Run engine until trapped air is forced out.

30. BLOWER MOTOR (REMOVAL AND INSTALLATION)

NOTE: Lack of air when blower is turned on can be caused by either blower not working or duct door not open.

Disconnect three electrical lead wires to blower motor. Remove mounting screws. Disengage rubber boot from heater housing. Remove blower motor mounting plate from blower housing and remove motor assembly.

When installing fan, adjust to ½ inch clearance between fan wheel and mounting plate.

31. REAR WINDOW DEFROSTER

The rear window defroster (optional on all Models) is located on and under the rear shelf panel of the car, and consists of a blower, flexible hose and nozzle. A switch, located on the instrument panel, controls the blower for defrosting the rear window. There is no connection with the heater in the car, with the rear window defroster, so that when air is drawn through the blower from inside the car, it is recirculated on the rear window glass.

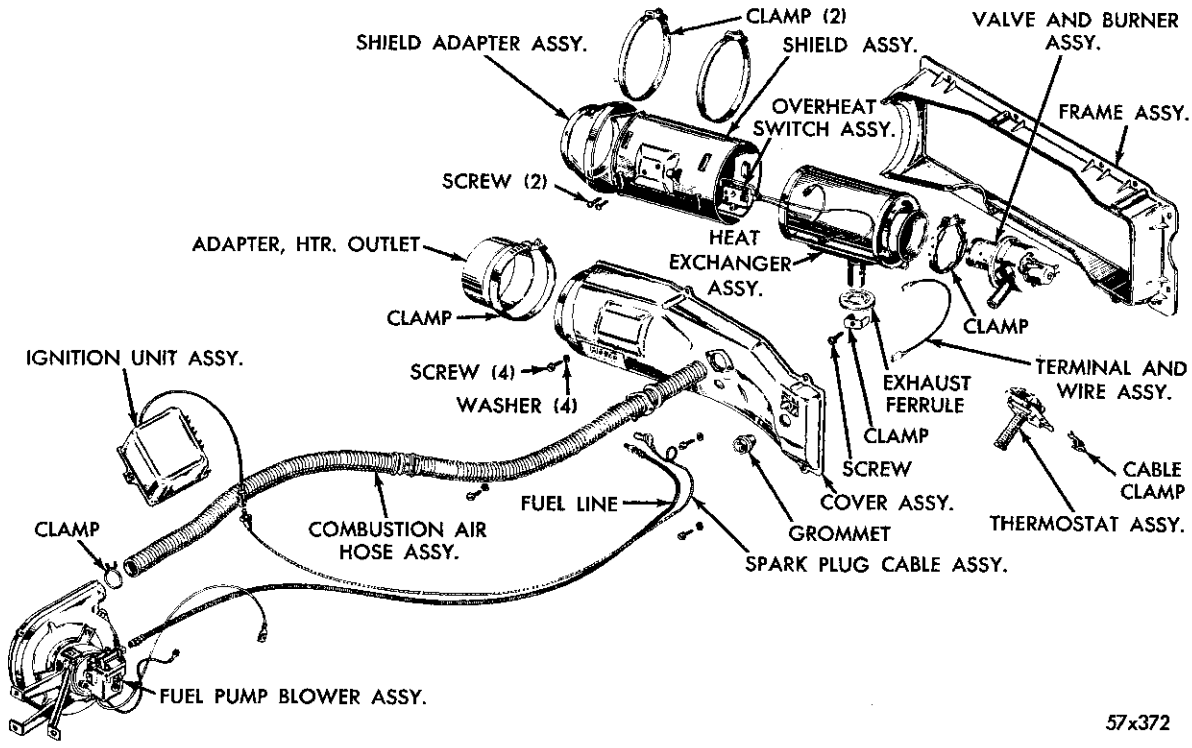

Fig. 14—Gas Heater Assembly (Disassembled View)

INSTANT HEAT CONDITIONAIRE HEATER (MODEL 801)

The Mopar Instant Heat Conditionaire consists of five main subassemblies as follows: Burner Blower and Fuel Pump, Heater Assembly, Ventilating Air Blower, Thermostat, and Ignition Unit.

For summer operation, there is one ventilator door provided, which directs fresh air from cowl vent opening to bottom of driver compartment. Two drain tubes are provided in bottom of air duct below ventilator door in case water does come in through vent.

For winter operation, turn blower on. The fresh air flows downward through heater case, heat exchanger, blower, duct door and distributor duct. Temperature control is provided by a lever on the instrument panel which opens the duct door on the right side of the car to admit air to the distribution duct. As the lever is moved towards warmer, the control cable moves the thermostat to demand more heat.

Defrosting is provided by heated air flowing from distribution duct to defroster outlet on top of instrument panel. The damper in the distributor duct divides the heated air to defroster outlet or floor as desired.

SERVICE PROCEDURES

32. BURNER BLOWER AND FUEL PUMP ASSEMBLY (Figs. 14 and 15)

a. Removal

Disconnect fuel line from both sides of fuel pump, remove combustion air hose, disconnect blower ground wire, and blower hot lead from ignition unit. Loosen, but do not remove, the screw in the mounting bracket clamp. The Fuel pump and Blower assembly can be removed by unhooking clamps from mounting bracket.

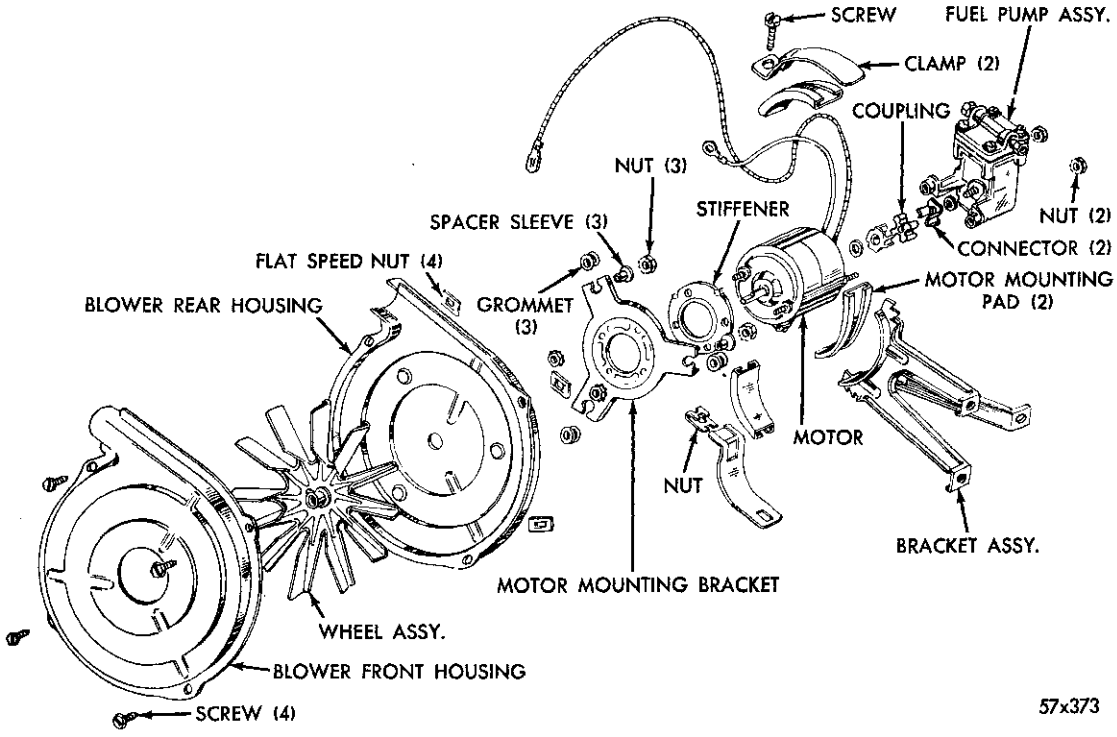

Fig. 15—Fuel Pump and Blower Assembly (Disassembled View)

Inspect fuel pump for evidence of leakage around pump cover. Tighten the screw securely if leakage is indicated. Inspect the rubber coupling between the fuel pump and motor and replace the coupling if it is worn or too soft.

b. Assembly

No attempt should be made to repair the fuel pump beyond tightening of the cover screws or replacement of damaged fuel fittings. If the pump is defective, replace the entire unit. When removing or replacing the coupling connectors on the fuel pump shaft and motor shaft, remember that both shafts have left-hand threads.

Check blower fan for clearance and freedom of movement. Repair or replace parts as required. When tightening nuts which attach the inner fan housing to motor mounting bracket, try the fan on the motor shaft and tighten nuts so that the rubber grommets will be compressed evenly but not too tightly. Excessive tightening will destroy the effectiveness of the grommets which are designed to reduce noise in the blower.

33. HEATER ASSEMBLY (Figs. 14 and 16)

The heater assembly consists of heater housing, heat exchanger, burner assembly and the shield which surrounds the heat exchanger. The housing of the Model 801 heater is constructed in two plastic sections, one of which is permanently mounted on the engine side of the dash panel. There will seldom be any reason to remove this part of the housing since all operating parts are attached to insulated cover.

a. Removal

Disconnect combustion air hose and fuel line at burner blower assembly. Disconnect two wires from terminal strip on outside of the heater case. Remove exhaust tube clamp and disconnect heater exhaust tube. Remove outlet adapter clamp at outlet of heater. Remove four screws which attach cover of heater case to frame. The cover can now be removed with all heater components attached.

b. Removal

Disconnect the white and black wires from two terminals of the solenoid fuel valve and pull ignition cable off spark plug. Disconnect fuel line from fitting on burner casting. The fuel line and ignition cable should not be removed

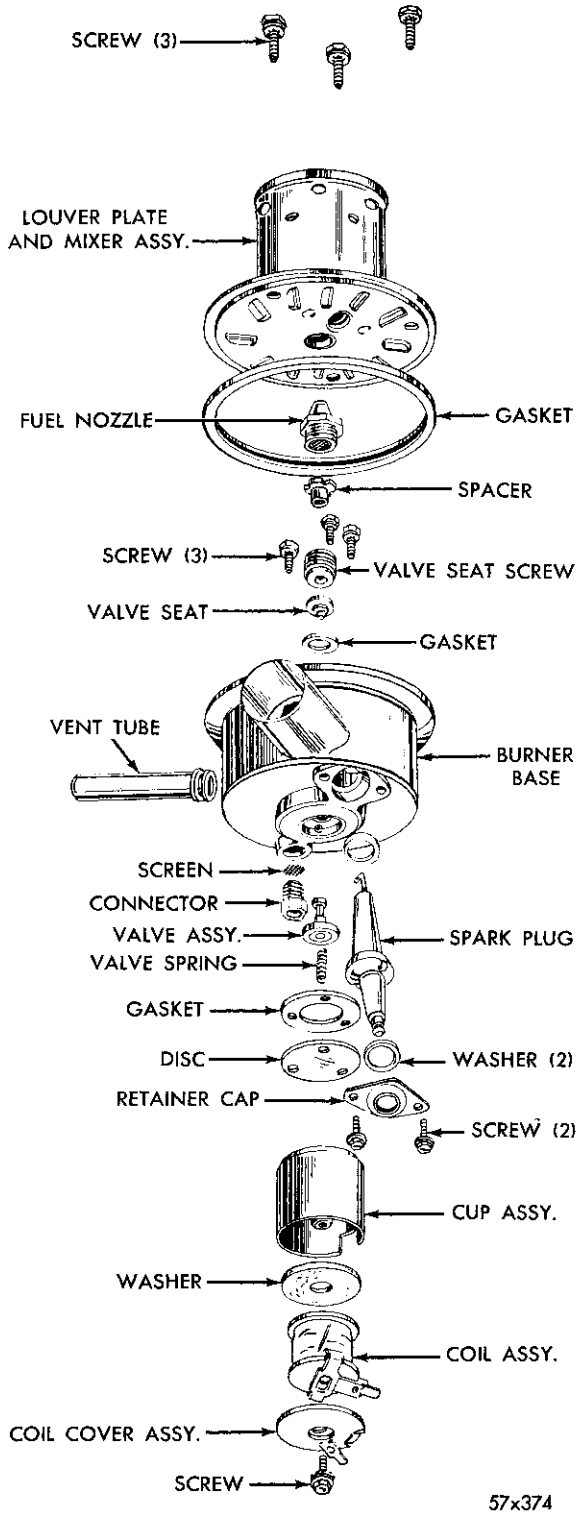

Fig. 16—Valve and Burner Assembly (Disassembled View)

from the grommet in the cover unless one or other requires replacement.

Loosen clamp which attaches the burner assembly to heat exchanger and break the seal formed by the gasket. The burner assembly can then be removed with rubber vent tube attached.

c. Inspection and Disassembly of Burner

The nozzle and mixer assembly should receive special inspection before disassembly since the condition of these parts will give an indication of the cause of unsatisfactory operation. The nozzle and inside of mixer can, around the nozzle, will normally be covered with a medium layer of black carbon and the nozzle should have a small gray opening at the orifice. The outer end of mixer will usually be burned to a gray or reddish color and some scaling or loose particles are usually present. These will do no harm.

Indications of improper operation are an uneven build-up of black carbon, or an excessively burned or eroded spot on the mixer. The openings around nozzle must not be clogged with carbon since this will prevent entry of proper amount of combustion air. If these symptoms are present, the condition will not be remedied by cleaning, since it is caused by a one-sided spray from nozzle or by dripping or leakage around the nozzle seat.

The spark plug electrodes will operate properly with a considerable accumulation of carbon and lead but must not be shorted out. If the electrodes are burned, this indicates an improperly directed spray and nozzle or nozzle seat is at fault.

d. Disassembly of Burner

Remove the fuel fitting and screen from fuel inlet. Remove spark plug retaining cap and lift out spark plug. Remove mixer and louver plate assembly by removing three screws in louver plate. Remove nozzle with a 5/8 inch box wrench or socket and remove rubber spacer which is underneath nozzle. Remove solenoid cover, coil, cork gasket; remove three screws in bottom of cup and remove cup, sealing disc, and gasket from burner casting. Invert the casting, and valve spring and plunger will drop out. Remove valve seat retainer from nozzle side of casting, using an Allen wrench (1/4 in. across flats) and remove valve seat and valve seat gasket.

e. Inspection of Burner

Inspect the valve seat for scoring around the sealing surface and inspect the end of plunger. The plunger contains a rubber insert which must be flat and slightly recessed into the metal retainer. If the insert is uneven, replace the plunger assembly. Do not attempt to clean or repair the nozzle. Replace this unit at each overhaul. Clean burner casting, mixer assembly and spark plug, being very careful not to permit any foreign matter to enter the passages of the burner casting. Discard any defective parts and replace with new.

f. Assembly of Burner

If fuel line inlet screen was removed from burner casting, install a new screen. Install the fuel inlet fitting and tighten. Install the valve seat gasket, the valve seat and the valve seat retainer in the order named, making sure the pointed side of the valve seat is toward the solenoid end of the casting. Tighten the retainer firmly but do not use force. Install a new spacer and nozzle and tighten. Insert the valve plunger in the other end of casting and check it for free movement, then place spring, gasket, sealing disc and solenoid cup on the casting and reinstall three screws, which must be tightened evenly to insure a good seal.

Insert coil retainer gasket in bottom of coil retainer. Insert coil assembly so that the terminal fits down into the cut-out portion of retainer, and ground terminal is directly over screw hole at the top. Install cover on retainer and tighten screw securely. Position the gasket over the louver plate.

NOTE: The step on the inside portion of the gasket must contact the outer flange of louver and tapered portion of gasket must face the mixer. Position louver plate and mixer assembly with gasket over nozzle. Align three screw holes and spark plug hole with their respective holes in the burner casting. Install three lockwasher screws in louver plate and tighten finger tight. Tighten screws to apply even pressure to the nozzle.

Adjust the spark plug gap to .085 inch. Install spark plug gaskets on spark plug, (concave side of gaskets against the ball portion). Carefully insert the spark plug through the opening in housing and through louver plate. Make certain that the guide slot of spark plug

is in line with guide on casting. Tighten spark plug cap attaching screws evenly and securely. Fit the rubber vent tube into the opening in the burner casting.

34. HEAT EXCHANGER AND OVERHEAT SWITCH (Fig. 14)

Do not remove the heat exchanger unless it is defective and needs to be replaced or the overheat switch requires service. The heat exchanger has no operating parts and should only require replacement after prolonged use. If replacement should become necessary, it can be removed as follows: Loosen two clamps inside cover of heater housing and work the exhaust ferrule free. Be careful not to bend the mounting brackets in cover when removing the heat exchanger and shield assembly. Spread the shield assembly by hand and let the heat exchanger slide out the straight end. The overheat switch will then be accessible and can be removed from inside the shield if necessary.

Inspect the heat exchanger for evidence of leakage, dents, loose seams and interior condition. The inside of the heat exchanger will normally contain a deposit of lead and other products of combustion but this should not be regarded as a defect unless the coating is sufficient to cause a noticeable increase in the warm-up period of the heater. When such is the case, the heater can be restored to its original efficiency by installing a new heat exchanger. It is not recommended that any attempt be made to weld or otherwise repair the heat exchanger. Clean as much of the deposits from inside the exchanger as possible and blow it out with compressed air. Replace entire unit if it appears unserviceable after cleaning.

Inspect overheat switch in heat exchanger shield for broken porcelain, burned or broken wiring, loose or broken contact points or other visible damage. Replace switch if such conditions exist.

35. THERMOSTAT (Fig. 14)

a. Removal

If the thermostat fails to control the duct outlet temperature, it is usually an indication that the cam is loose on the helix shaft or that end of helix has dropped out of slot in the control shaft. To correct this condition, adjust the thermostat as follows: Inspect the helix to make sure it is crimped tightly in the end of the control shaft. Fit the helix in slot and crimp shaft with pliers if necessary. Leave thermostat on bench until the helix reaches room temperature if it was removed from a cold car. Loosen allen set screw in plastic cam on the base end of control shaft, making sure the shaft is completely free to revolve and take its normal position at room temperature (about 75 to 85° F.).

With the plastic cam free on the shaft and the micro-switch down, move the control cable linkage as far as it will go to the left and hold in this position. While holding the linkage, turn the plastic cam in a counter-clockwise direction until the micro-switch just clicks, then tighten the set screws in the cam.

CAUTION

Do not disturb the two screws which attach the micro-switch to the thermostat base.

b. Installation

When reinstalling the thermostat, insert the

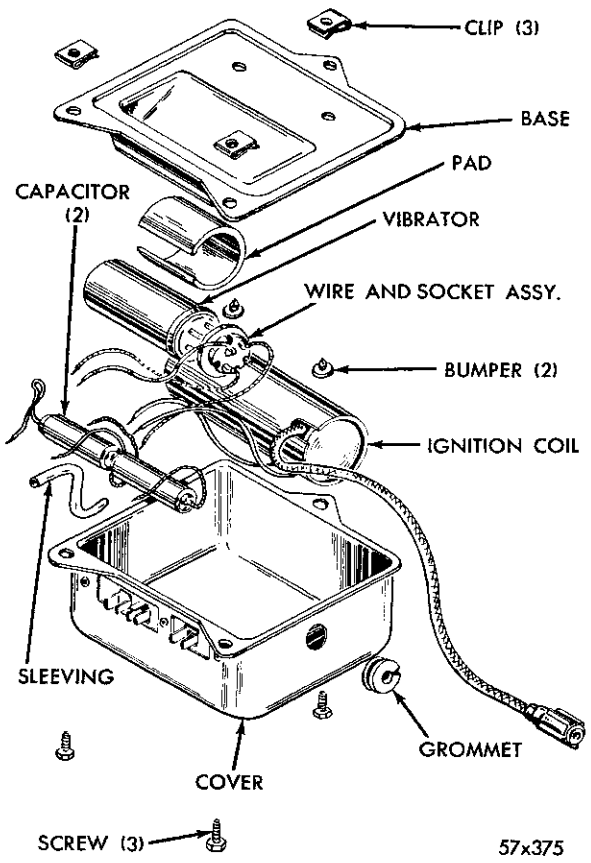

Fig. 17—Ignition Unit Assembly (Disassembled View)

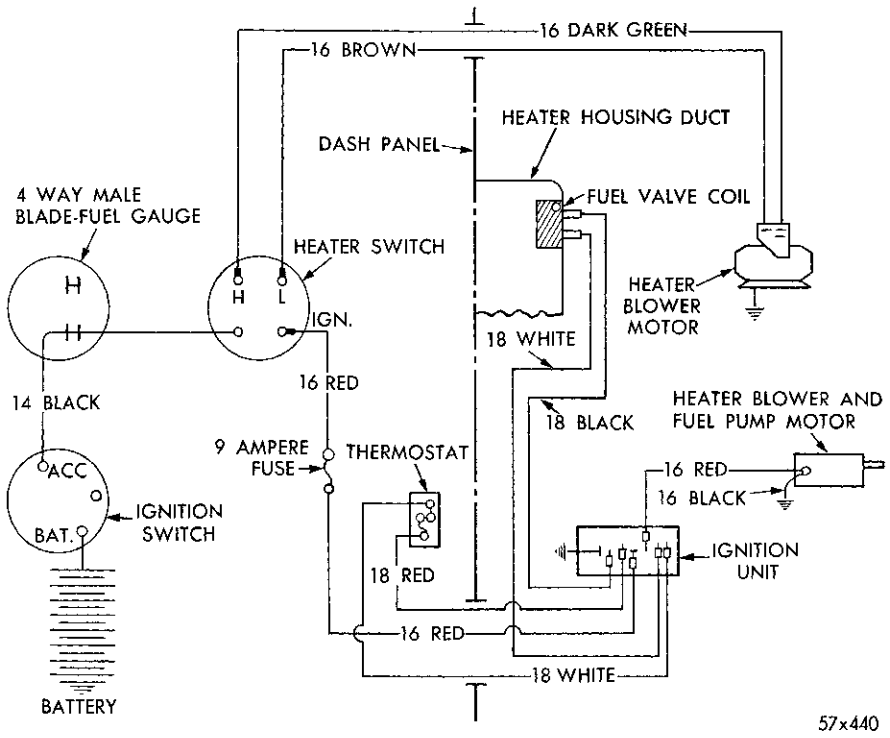

Fig. 18—Gas Heater Wiring Diagram

control cable and housing through the retainer clip located on the upper portion of the thermostat mounting plate. Insert end of cable through swivel hole of thermostat linkage, but do not tighten screw. Move temperature control to extreme low heat position; then move the thermostat control linkage in a downward direction as far as it will go. Tighten swivel screw. When thermostat cable is properly installed, the temperature control should move the thermostat linkage from one extreme to the other without interference from the cable housing.

36. IGNITION UNIT (Fig. 17)

The ignition unit is designed so that internal components can be replaced, thus reducing cost of service on this unit. In event of ignition failure that has been traced to ignition unit, it will be necessary to determine which component is responsible. This is most easily done by first substituting a vibrator that is known to be good.

If the trouble is eliminated, the old vibrator was at fault. If substitution of the vibrator fails to correct the difficulty, the ignition coil is probably at fault. Capacitor failure will usually lead to failure of the vibrator through pitting of the points and new capacitors should always be installed when the vibrator is changed. Failure of a capacitor may also be indicated by noise in car radio. To gain access to the ignition unit components, remove three mounting screws and remove the clips through which the screws were installed. The cover of the unit can be removed for servicing of components. Figure 18 shows the complete wiring diagram of the gas heater.

SERVICE DIAGNOSIS

The MOPAR Instant Heat Conditionaire is especially designed to simplify service procedures and requires no periodic service or inspection except a check at start of heating season to make sure that all wires are properly connected to ignition unit and heater case.

The burner blower and fuel pump assembly is lubricated at the factory for the life of the equipment and no attempt should be made to lubricate this unit in the field.

37. NO HEAT

a. Clogged fuel nozzle.

b. No fuel pressure, or low fuel pressure.

c. Ignition failure.

d. Insufficient combustion air.

Although these causes of failure are listed in the order of probability, it is advisable to check simple causes first to avoid unnecessary disassembly of heater. Proceed with the check as follows:

e. With ignition switch on and car engine NOT running, turn heater blower switch on. The fresh air blower should start immediately. Failure of this blower indicates a defect in blower switch, fuse, blower, or in associated wiring. The burner blower motor and pump assembly should also start when switch is turned on. Failure of this motor to start can be caused by a defective blower switch. A defective coupling between motor and fuel pump will cause loss of fuel pressure, even if motor is running. Check voltage at red terminal of ignition unit with a test light or voltmeter and if voltage is satisfactory, replace burner blower motor.

f. If both blowers run, check the fuel control valve by removing the white lead from terminal block on front of heater case. Touch this lead to terminal and listen carefully for a click as valve opens and closes. (The temperature control should be in HIGH HEAT position for this test). The click of valve is rather faint, but can be heard when engine is not running. If valve fails to click, shut off ignition, remove four screws from heater cover and lift it out far enough to install a jumper wire directly between white terminal inside case and white terminal of the solenoid valve. Disconnect overheat switch wires from these terminals but leave all other wires connected. Temporarily replace cover of heater case and turn on ignition. Touch white lead to terminal on front of case again and check for valve action. If valve fails to click with overheat switch shorted out, check voltage at white lead with a test light or meter. If lead is hot, and valve fails to click with overheat switch shorted out, the fuel valve solenoid coil is defective and must be replaced.

CAUTION

Do not permit the white lead to touch ground while making these tests.

g. If the solenoid valve is operating properly, it will be necessary to check the ignition unit. TURN IGNITION SWITCH OFF. Separate two sections of ignition cable at the connector. Insert a dual-electrode automotive type plug in end of ignition unit section of ignition cable and ground plug to engine block. This plug should be adjusted to a gap of .085 inches. Turn ignition and heater switches on and check the plug for a hot spark. If there is no spark, the ignition unit is defective and must be repaired.

h. If there is a spark at plug, reconnect ignition cable and check fuel pressure with a "T" fitting and gage at outlet of fuel pump while car engine is running. The pressure should be 21 to 23 psi. If pressure is satisfactory, and heater does not ignite, it can be assumed that nozzle is clogged or spark plug shorted out and burner assembly be removed from heater. Fuel pressure as high as 27 psi is usually an indication of a clogged nozzle.

i. Remove front of heater case and remove burner assembly from heat exchanger. Pull ignition cable and fuel line out of case and reconnect them to burner assembly. Leave solenoid wires disconnected. Ground this assembly to body of car and turn the heater switch on. Check for a spark at the spark plug electrodes.

CAUTION

Be sure burner is properly grounded and avoid touching any part of assembly during this test.

j. If hot spark appears at electrodes of spark plug, nozzle is defective and must be replaced. If spark is being shorted to ground or is completely absent, replace spark plug. If plug is shorted out by an accumulation of carbon, the nozzle is probably at fault and the spray pattern should be checked.

k. To examine the spray pattern, connect the white lead that was removed from front of case directly to insulated terminal of valve solenoid. Disconnect ignition cable from spark plug. Connect black lead to ground terminal in a similar way. At the ignition unit, disconnect both white wires and clip them together, using tape to insulate the connection. These wiring connections will energize the solenoid directly without going through the overheat switch (provided thermostat is calling for heat). After making connections, start engine and turn heater blower switch on (tempera-

ture control in high position). The fuel valve will open and spray from nozzle can then be examined.

CAUTION

Have a fire extinguisher at hand and avoid any possibility of igniting the spray. NEVER attempt to burn this assembly in the open.

l. The spray pattern must consist of a fine mist of fuel which is symmetrical in shape and is centered in mixer assembly. There must be no dripping or leakage around nozzle seat. If spray is coarse or uneven, or is directed at an angle in the mixer, the nozzle is defective and must be replaced.

m. Additional causes of burner failure are excessive clogging of screen in fuel inlet, clogging of fuel passages within burner casting, or a defective valve plunger or seat. Check these parts and replace as required.

38. HEATER GETS TOO HOT

This trouble can be caused by a poorly adjusted thermostat or insufficient fresh air. To test thermostat, connect a test light between white terminal of ignition unit and ground. Start heater with engine running. After heater warms up, the test light should go on and off as thermostat cycles the heater on and off. If the heater cycles, but test light remains on, it is an indication that thermostat contacts are remaining closed and heater is cycling on overheat switch. Install a new thermostat to correct this condition. The fresh air supply should be checked before replacing thermostat since proper thermostat action is dependent upon an adequate supply of fresh air through heater system. Insufficient air flow can be caused by defective fresh air blower motor or by an obstruction in fresh air system. Distributive ducts door must be open at any time heater is in use. Door is controlled by temperature lever on instrument panel.

39. HEATER WORKS INTERMITTENTLY

a. If heater gets very hot and shuts itself on and off in an intermittent way, the trouble is probably caused by insufficient fresh air flow. This will cause heater to shut off on the overheat switch. Check fresh air blower and short coupling duct between blower and heater, also distribution duct door where air enters duct on right side of passenger compartment.

b. Another cause of intermittent operation is air lock in heater fuel pump caused by small air bubbles in fuel. To correct this condition, inspect the heater fuel take-off tee in engine fuel pump. If heater fuel line comes off at top, remove fittings from fuel pump and reinstall them so that the heater fuel line is attached at the bottom. This will prevent bubbles from entering fuel pump. Tighten all fittings carefully and bleed fuel line after it is attached to heater fuel pump.

40. HEATER CAUSES ODOR

a. If odor is raw gasoline, the fuel connection at burner casting is leaking or solenoid valve is not tight on casting. Check and tighten leak. A slight odor when a new heater is first turned on should be disregarded.

b. If odor is burned gasoline, the exhaust tube under heater is leaking and must be repaired.

41. TOO MUCH SMOKE FROM HEATER

Excessive smoking and carbon are caused by a slow combustion air motor or a defective nozzle. Check these causes and repair or replace as required. This condition could also be caused by delayed ignition, resulting from spark plug electrodes which are badly burned, out of adjustment, or shorted with carbon. Check plug gap. It should be .085 inches and the electrode should be reasonably clean and approximately centered in insulator of spark plug. Bend the ground electrode when making adjustment.

42. HEATER MAKES NOISE WHEN STARTING

a. If heater "pops" or "spits" when starting or cycling, it is an indication that fuel is being admitted to burner that is not being instantly ignited. This can be caused by a leaking solenoid valve seat or plunger which will permit fuel to flow in the "off" position. Another possible cause is low fuel pressure from a defective pump, or a combination of low fuel pressure and insufficient combustion air caused by a slow burner blower motor.

b. Check fuel pressure first; if pressure is satisfactory, remove entire burner assembly from heater. Disconnect ignition cable and solenoid leads, but reconnect the fuel line. Examine inside of mixer can to make sure the

nozzle is dry. Turn the heater switch on to start burner blower and fuel pump which will apply fuel pressure to solenoid valve. Watch nozzle carefully for signs of leakage. The slightest amount of leakage through nozzle will indicate a defective shut-off valve which must be repaired as directed above.

c. This condition could also be caused by spark plug electrodes which are bent out of position, even though adjusted to proper gap. The center electrode of plug must be approximately straight to locate the spark gap in proper position with respect to the spray. Install a new plug and adjust by bending only the ground electrode to correct this condition.

43. HEATER FAILS TO START WHEN SWITCH IS TURNED ON. BURNER BLOWER DOES NOT RUN

a. Replace fuse.

b. Repair or replace red wire to center terminal of ignition unit.

c. Repair or replace red wire to blower. Check blower ground.

d. Replace motor.

e. Repair or replace switch.

44. BURNER BLOWER RUNS BUT HEATER FAILS TO IGNITE

a. Check thermostat and wiring and repair or replace as required.

b. Replace switch.

c. Repair as necessary ignition unit.

d. Replace plug and adjust gap.

e. Replace solenoid coil.

f. Replace nozzle.

g. Replace pump.

h. Repair or replace hose.

i. Replace coupling.

45. HEATER IGNITES BUT GOES OUT LATER

a. Replace or repair blower.

b. Open vent.

c. Remove obstruction.

d. Replace duct.

46. HEATER BURNS INTERMITTENTLY, HEAT OUTPUT IS TOO LOW

a. Replace thermostat.

b. Bleed fuel line and check all connections for leaks. Turn takeoff tee in engine fuel pump down if not already in this position.

47. HEATER BURNS INTERMITTENTLY, HEAT OUTPUT IS TOO GREAT

a. Check thermostat and repair or replace as required. Adjust control cable.

48. HEATER BURNS CONTINUOUSLY, HEAT OUTPUT IS TOO LOW

a. Replace nozzle.

b. Replace fuel pump.

49. ODOR OF RAW GASOLINE IN CAR

a. Tighten or replace fuel line and fitting.

50. ODOR OF BURNED GASOLINE IN CAR

a. Replace connection.

b. Replace or tighten clamp.

51. EXCESSIVE AMOUNT OF SMOKE FROM HEATER EXHAUST WHEN HEATER STARTS

a. Repair valve.

b. Repair or replace burner blower.

c. Clean exhaust, correct cause if clogged with carbon.

52. POPPING NOISE WHEN HEATER STARTS OR CYCLES

a. Repair valve.

b. Install new nozzle and tighten carefully.

c. Install new nozzle, check spray and adjust plug.

d. Adjust gap.

e. Check blower motor and hose. Repair or replace as required.